

Shew in stacks

5-12

Highway Safety Literature

An Announcement
of Recent Acquisitions. . .

HSL No. 71-5
February 5, 1971



THIS ISSUE CONTAINS:
HS-008 477 - HS-008 512

U.S. Department of Transportation / National Highway Traffic Safety Administration

HSL No. 71-5 February 5, 1971 HS-008 477 - HS-008 512

HIGHWAY SAFETY LITERATURE AN ANNOUNCEMENT OF RECENT ACQUISITIONS

Published Weekly by the National Highway Traffic Safety Administration
Washington, D.C. 20591

INTRODUCTION

Publications announced in *Highway Safety Literature* include the most recent additions to the collection of the NHTSA Scientific & Technical Information Service. Subject areas covered include all phases of highway, motor vehicle, and traffic safety, especially those encompassed by the National Traffic and Motor Vehicle Safety Act of 1966 and the Highway Safety Act of 1966.

Individual issues of *HSL* are numbered according to the year and the issue number within that year; thus, 71 designates the year and 1, 2, 3, etc. the individual issues. To aid the user in location citations by the HS-number, the cover bears the inclusive entry numbers for each issue.

Entries in *HSL* are arranged according to the revised NHTSA Subject Category List shown in the Table of Contents. The List is a two-level arrangement consisting of five major subject fields subdivided into 58 subject groups. Documents related directly to the National Highway Traffic Safety

Administration (NHTSA) are announced in a separate section headed NHTSA DOCUMENTS and are numbered in five distinct series: NHTSA Accident Investigation Reports (HS-600 000 series), NHTSA Compliance Test Reports (HS-610 000 series), NHTSA Contractors Reports (HS-800 000 series), NHTSA Staff Speeches, Papers, etc. (HS-810 000 series), and NHTSA Imprints (HS-820 000 series). For NHTSA DOCUMENTS in series HS-600 000 and HS-610 000, individual full case reports are available for inspection at the National Highway Traffic Safety Administration; or for purchase from NTIS (see page ii). Although announced together in a separate section, these documents are also assigned specific subject categories for machine retrieval.

A document which contains a number of separate articles is announced as a complete volume in the subject category most applicable to it as a whole. Entries for the individual articles appear in their most specific subject category.

SAMPLE ENTRIES

Subject Category Array

NHTSA Accession no..... HS-800 218 Fld. 5/21; 5/9
Title of document..... AN INVESTIGATION OF USED CAR
SAFETY STANDARDS-SAFETY
INDEX: FINAL REPORT. VOL. 6 -
APPENDICES G-L

Personal author(s)..... by E. N. Wells; J. P. Fitzmaurice; C. E.
Guilliams; S. R. Kalin; P. D. Williams

Corporate author..... Operations Research, Inc., Silver
Spring, Md., 015000

Collation

Publication date..... 12 Sep 1969 150p
Contract FH-11-6921
Report no. ORI-TR-553-Vol-6; PB-190
523

Abstract..... Appendices G-L to this study of used
car safety standards include: indenture
model diagrams for classes I-IV motor
trucks; degradation, wear, and failure
data for motor truck classes I-IV; and
safety index tables for classes I-IV
motor trucks.

Search terms: Wear /Trucks;
Failures /Trucks; Used cars; Inspec-
tion standards /Trucks; Inspection
standards /Data

HS-004 497 Fld. 5/19

AUTO THEFT-THE PROBLEM
AND THE CHALLENGE

by Thomas A. Williams, Sr.

Journal citation . . . Published in *FBI Law Enforcement
Bulletin* v37 n12 p15-7 (Dec 1968)

Gives figures on the extent of the
auto theft problem and comments on
antitheft devices available now or in
the planning stage.

Search terms: Theft, Theft protec-
tion, Stolen cars

AVAILABILITY: NTIS

NOTE: () Numbers in parentheses following certain subject groups indicate the Highway Safety Program Standards (No. 1, and up) and/or Federal Motor Vehicle Safety Standards (No. 101 and up) which may apply to these groups.

INTRODUCTION AND	
SAMPLE ENTRIES	Inside Front Cover
AVAILABILITY OF DOCUMENTS	ii

NHTSA SUBJECT FIELDS AND GROUPS

1/0 ACCIDENTS	1
/1 Emergency Services (11, 15-16)	
/2 Injuries	
/3 Investigation and Records (10, 14-15)	
/4 Locations (9, 14)	
2/0 HIGHWAY SAFETY	3
/1 Breakaway Structures	
/2 Communications	
/3 Debris Hazard Control and Cleanup (15-16)	
/4 Design and Construction (12, 14)	
/5 Lighting (14)	
/6 Maintenance (12)	
/7 Meteorological Conditions	
/8 Police Traffic Services (15)	
/9 Traffic Control (13-14)	
/10 Traffic Courts (7)	
/11 Traffic Records (10)	
3/0 HUMAN FACTORS	3
/1 Alcohol (8, 14)	
/2 Anthropomorphic Data	
/3 Cyclists	
/4 Driver Behavior	
/5 Driver Education (4, 14)	
/6 Driver Licensing (5, 10, 14)	
/7 Drugs Other Than Alcohol	
/8 Environmental Effects	
/9 Impaired Drivers	
/10 Passengers	
/11 Pedestrians (14-15)	
/12 Vision	

4/0 OTHER SAFETY-RELATED AREAS	7
/1 Codes and Laws (6)	
/2 Community Support (17)	
/3 Cost Effectiveness	
/4 Governmental Aspects	
/5 Information Technology	
/6 Insurance	
/7 Mathematical Sciences	
/8 Transportation Systems	

5/0 VEHICLE SAFETY	7
-------------------------------------	----------

* All Federal Motor Vehicle Safety Standards apply to passenger vehicles. An asterisk before a subject group indicates additional types of vehicles to which the indicated standards may apply.

/1 Brake Systems (102, 105-6, 116)	
* /2 Buses, School Buses, and Multipurpose Passenger Vehicles (102-4, 106-8, 111-3, 116, 205-6, 209, 211)	
* /3 Cycles (3; 108, 112, 116, 205)	
/4 Design (14; 101-2, 105, 107, 201)	
/5 Door Systems (201, 206)	
/6 Fuel Systems (101, 301)	
/7 Glazing Materials (205)	
/8 Hood Latch Systems (113)	
/9 Inspection (1)	
/10 Lighting Systems (101, 105, 108, 112)	
/11 Maintenance and Repairs	
/12 Manufacturers, Distributors, and Dealers	
/13 Mirrors and Mountings (107, 111)	
/14 Occupant Protection (15; 201-4, 207-10)	
/15 Propulsion Systems	
/16 Registration (2, 10)	
/17 Safety Defect Control	
/18 Steering Control System (101, 107, 203-4)	
/19 Theft Protection (114-5)	
* /20 Trucks and Trailers (102-4, 107-8, 112-3, 116, 205-6, 209)	
/21 Used Vehicles	
/22 Wheel Systems (109-10, 211)	
/23 Windshield-Related Systems (101, 103-4, 107, 205, 212)	

NHTSA DOCUMENTS	-
EXECUTIVE SUMMARIES	9

NOTE: Material published in Highway Safety Literature (HSL) is intended for the information and assistance of the motor vehicle and highway safety community. While brands names, equipment model names and identification, and companies may be mentioned from time to time, this data is included as an information service. Inclusion of this information in the HSL should not, under any circumstances, be construed as an endorsement or an approval by the National Highway Traffic Safety Administration, Department of Transportation of any particular product, course, or equipment.

Harry A. Feinberg
Managing Editor



Department of Transportation personnel may borrow copies of publications directly from the NHTSA. Outside the Washington, D.C. area, phone (202) 426-2768. In Washington, D.C. area, use government ID, phone 118-62768. Non-DOT personnel should contact their company or agency libraries for assistance.

Journals cited may be obtained through most research libraries.

Contractors' reports and other documents can usually be obtained as indicated under AVAILABILITY. However, there is no certainty that retention copies will be available for more than a limited period after a document is issued.

The more common distribution sources are identified by symbols which are explained below:

NTIS: National Technical Information Service (formerly Clearinghouse for Federal Scientific and Technical Information-CFSTI), Springfield, Va. 22151. Order by accession number: *HS, AD, or PB*. Prepayment is required by NTIS (CFSTI) coupon (GPO coupons are not acceptable), check, or money order (made payable to the NTIS). *HC* (Paper copy; full size original or reduced

facsimile) \$3.00 up; *MF* (microfiche approximately 4x6" negative sheet film; reader required) \$0.95.

GPO: Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. Give corporate author, title, personal author, and report number. Prepayment is required by GPO coupon (NTIS [CFSTI] coupons are not acceptable), check or money order (made payable to the Superintendent of Documents).

HRB: Highway Research Board, National Academy of Sciences, 2101 Constitution Ave., N. W., Washington, D. C. 20418.

NHTSA: National Highway Traffic Safety Administration General Services Division, Washington, D.C. 20591 (Telephone (202) 426-0874).

SAE: Society of Automotive Engineers, Dept. HSL, 2 Pennsylvania Plaza, New York, N.Y. 10001. Order by SAE report number. Prices given are list; discounts are available to members and sometimes to libraries and U.S. Government Agencies. Prepayment is required; orders without payment are subject to a \$1 handling charge.

IMPORTANT

WHEN REQUESTING a document, to be absolutely sure you receive what you order, give the accession number (HS, PB, AD number) or report number (in cases such as an SAE document), title of report, and the personal or corporate author (whichever is cited). When requesting an HS-numbered document from NTIS (CFSTI), add DOT/ to the prefix HS-; example HS-800 000 should be ordered as DOT/HS-800 000.

SPECIAL NOTICE

NEW PRICES FOR DOCUMENTS AVAILABLE FROM NTIS

On January 1, 1971, the National Technical Information Service (NTIS) increased the prices for documents in certain categories. These increases were made necessary by increased costs. Prices are now as follows:

PAPER COPY

Most documents announced after January 1, 1969, are priced:

1 to 300 pages	\$3.00
301 to 600 pages	6.00
601 to 900 pages	9.00
Over 900 pages	Exception Price

Two years after announcement, documents having 300 pages or less will have a service charge of \$3.00 added to the announced price. No service charge will be added for documents over 300 pages.

Documents announced prior to January 1, 1969, have a service charge of \$3.00 added to the announced price.

MICROFICHE

Microfiche reproduction of documents on a demand basis are priced at 95 cents per document.

Documents available on Standing Order through NTIS Selective Dissemination of Microfiche Service (SDM) are priced at 35 cents per document.

B5

1/1 Emergency Services

HS-008 477 Fld. 1/1

HELICOPTER AMBULANCE STUDY. FINAL REPORT

by Robert R. Coleman

Copter's Inc., Bryn Mawr, Pa., C67000
May 1969 116p

This study concluded that the helicopter can improve the level of medical service by reducing travel time even in an area where existing ambulance service is considered to be above average. The helicopter should function as part of a regional emergency medical center in cooperation with other emergency services within the region. The study included police services as well as traffic services. There were 144 accident responses with 49 air lifts completed during a 12 month period. Helicopter models were discussed in relation to function. Other matters presented were: hospital landing facilities; communications; uses other than medical emergencies, legal aspects, existing emergency medical services, accident data, and cost analysis.

Search terms: Helicopters /Emergency medical services; Helicopters /Costs; Accident data; Helicopters /Police traffic services; Helicopters /Communication systems; Helicopters /Legal factors

AVAILABILITY: Corporate author

HS-008 478 Fld. 1/1

NEBRASKA'S AIR AMBULANCE PROJECT. "OPERATION SKY-AID". FINAL REPORT

by C. P. Karthaus; John D. German; James L. Sweetman; Paul R. Haith

Nebraska. State Patrol, Lincoln, N35800; Nebraska. Army National Guard, Lincoln, N35650

1 Jul 1969 42p

The role of the helicopter in emergency service was tested under civilian conditions. Recommendations and findings include: standby helicopter ambulance program is not feasible because of costs and organizational

requirements; including emergency medical services with other helicopter operations such as traffic surveillance would be more feasible; helicopter transportation could be used in other than traffic emergencies such as scheduled transportation of patients from one hospital to another. The study was carried out as a cooperative effort of medical, military and law enforcement personnel.

Search terms: Helicopters /Emergency medical services; Helicopters /Costs; Helicopters /Multidisciplinary teams

AVAILABILITY: Corporate author

1/3 Investigation and Records

HS-008 479 Fld. 1/3

HSRI ACCIDENT DATA BANKS

by James O'Day; Ralph E. Darby, Jr.

Published in *HIT Lab Reports* p3-5 (Sep 1970)

The Highway Safety Research Inst. accident data files contain records from 1965 to the present for Ann Arbor and rural Washtenaw County. Also included are various time spans of the Wayne County and the Michigan fatal files, the Oakland County and the Michigan trunk line accident files and seven months of a truck accident file. Sample tables of data from the different files are shown.

Search terms: Highway Safety Research Inst. /Accident data; Accident data /Statistics; Accident data /Michigan

HS-008 480 Fld. 1/3

INTERNATIONAL COMPARISONS OF TRAFFIC ACCIDENTS

by Patrick A. Hall

Published in *Traffic Engineering* v41 n2 p20-4 (Nov 1970)

7 refs

This Irish study compares road fatality statistics in twelve countries. Fatality figures for 1960-1968 are shown by fatalities per 100,000 population, fatalities per 10,000 vehicles licensed,

and fatalities per 100,000,000 vehicle miles. Equations are given to relate deaths per 10,000 registered motor vehicles to registered motor vehicles per 1,000 population. International comparisons, particularly personal injury and property damage 'only' accidents, are hampered by variations in reporting and recording procedures, and terminology used. Conclusions are: road accident prevention resources are not being optimally allocated and/or road safety is an expensive commodity for which society is not yet willing to pay. Existing literature leads to the conclusion that characteristics of this transportation mode (the speed, the flexibility, and the freedom of operation) must be changed before dramatic reductions in traffic accidents can be expected.

Search terms: Accident data /International aspects; Fatalities /Population; Fatalities /Motor vehicle registration; Fatalities /Vehicle mileage; Fatalities /Statistics; Accident records /International aspects; Accident reports /International aspects; Accident prevention

HS-008 481 Fld. 1/3

DEVELOPMENT OF IMPROVED METHODS FOR REDUCTION OF TRAFFIC ACCIDENTS

by Richard C. Braisted

Cornell Aeronautical Lab., Inc., Buffalo, N. Y., C67200

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p55-9 (1966)

1966 5p

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

Research to develop motor vehicle accident investigation procedures, records, and statistics which will more accurately reveal accident causation is outlined. The tasks of this research will be dealt with in three pilot projects: data assembled by police; detailed investigation in one locality; and collection and analysis of one type of data to be used in determining exposure data.

ACCIDENTS

HSL No. 71-5

1/3 Investigation and Records (Cont'd)

HS-008 481 (Cont'd)

Search terms: Accident investigation; Accident research /Police; Accident causes; Accident risks

AVAILABILITY: In HS-008 504

HS-008 482 Fld. 1/3; 4/4

THE PUBLIC HEALTH SERVICE RESEARCH GRANTS PROGRAM IN ACCIDENT PREVENTION

by Leon G. Goldstein

Public Health Service, Washington,
D.C. Div. of Accident Prevention,
P40200

Published in *AAMVA Summary of
Proceedings: Research Conference and
Workshop* p88-94 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

In 1951 the Public Health Service began supporting research in accident prevention through the research grants program. In 10 years a total of 44 grants were made at a cost of over four million dollars. Thirty of these projects costing \$2.9 million were concerned with motor vehicle traffic accidents. The research supported is: to determine accident causes; to consider means of preventing accidents; and to minimize the consequences of accidents. The operation of the Research Grants System is described.

Search terms: Public Health Service /Accident studies; Accident studies /Costs; Accident studies /Federal aid

AVAILABILITY: In HS-008 504

HS-008 483 Fld 1/3; 4/4

ENGINEERED SAFETY THROUGH RESEARCH AND DEVELOPMENT: THE NATURE AND GOALS OF THE BUREAU OF PUBLIC ROADS PROGRAM OF RESEARCH AND DEVELOPMENT FOR TRAFFIC SAFETY

by David Solomon

Bureau of Public Roads, Washington,
D. C., B33600

Published in *AAMVA Summary of
Proceedings: Research Conference and
Workshop* p95 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

The Bureau of Public Roads has begun a research and development program aimed at bringing about a drastic reduction in the number and severity of accidents on highways. Its objective is the development of engineering improvements based on sound research that can be applied to the highway vehicle driver combination to make the total system as accident free as possible.

Search terms: Bureau of Public Roads /Highway safety; Bureau of Public Roads /Research

AVAILABILITY: In HS-008 504

HS-008 484 Fld. 1/3; 4/7

AN EMPIRICAL ANALYSIS OF ACCIDENT DATA USING INDUCED EXPOSURE

by William K. Hall

Published in *HIT Lab Reports* p6-12
(Sep 1970)

8 refs

Using the concept of induced exposure, the over-representation of both young and old drivers in the accident responsible population was obvious. The effects of vehicle age and specific model years, even when the effects of operator age were removed were not conclusive. The assessment of accident responsibility in this analysis may be influenced by the bias of enforcement personnel toward such factors as young or old drivers, or older vehicles.

Search terms: Accident risks /Statistics; Age factor in accidents /Statistics; Vehicle age /Accident factors; Accident factors /Mathematical analysis; Accident factors /Ann Arbor; Adolescent drivers /Accident data; Young adult drivers /Accident data; Adult drivers /Accident data; Aged drivers /Accident data

HS-008 485 Fld. 1/3; 4/7

SOME OF THE STATISTICAL PROBLEMS IN CONDUCTING RESEARCH INTO ACCIDENT AND VIOLATION REDUCTION

by Robert Brenner

California Univ., Los Angeles. Inst. of Transportation and Traffic Engineering, C21000

Published in *AAMVA Summary of
Proceedings: Research Conference and
Workshop* p32-4 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

The primary objectives of this project were to study various statistical techniques for detecting stable patterns in aggregated accident data, and to develop methods for adapting these techniques to operational decision-making. A related objective was to investigate how to incorporate the statistical techniques into accident control charts. New concepts underlying the use of accident information for operational purposes included: there is no single optimum form of control chart system for all operational applications; exposure should be dropped from primary statistical treatments of accident information although it may be included in later secondary analyses.

Search terms: Accident studies /California; Accident risks /Statistical analysis; Accident data /Statistical analysis

AVAILABILITY: In HS-008 504

HS-008 486 Fld. 1/3; 5/20

ANALYSES OF TRUCK CRASH DATA

by James O'Day

Published in *HIT Lab Reports* p1-3
(Oct 1970)

From the records of the Bureau of Motor Carrier Safety, 25,000 accidents for a seven month period in 1966 were analyzed to identify over-represented variables involving various levels of crash severity. Two analytical techniques were used. In the first, the variables were property damage in dollars, time of day, type of vehicle, driver

age, day of week, whether local or inter-city travel, and region of the country. In the second, the variables were mechanical defects (especially fire), dollar damage per crash, number of injuries, and number of fatalities. In crashes involving fire, dollar damage, injuries, and fatalities all increased.

Search terms: Truck accidents / Accident data; Truck accidents / Statistics; Truck accidents / Mathematical analysis; Truck accidents / Fires; Truck accidents / Damage costs; Truck accidents / Time of day; Truck accidents / Day of week; Tractor trailers / Accident data; Defective vehicles / Truck accidents; Truck accidents / Fatalities; Truck accidents / Injuries; Time of day / Statistics; Day of week / Statistics; Fires / Statistics; Damage costs / Statistics; Defective vehicles / Statistics

2/0 HIGHWAY SAFETY

HS-008 487 Fld. 2/0

HOW DO MOTOR VEHICLE DEPARTMENTS INSTIGATE AN IN-HOUSE RESEARCH PROGRAM—SOME TYPICAL EXAMPLES

by G. Van Oldenbeek

California, Dept. of Motor Vehicles, Sacramento, C03000

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p86-7 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

Research in the California motor vehicle department is described.

Search terms: State government / Research; Motor vehicle safety / Research; Motor vehicle safety / California

AVAILABILITY: In HS-008 504

2/4 Design and Construction

HS-008 488 Fld. 2/4

DO YOUR ROAD IMPROVEMENTS IMPROVE THE ROAD?

by R. R. Chaplin

Published in *Public Works* v101 n12 p45-8 (Dec 1970)

Based on a paper presented at World Highway Conference (no. 6), Montreal, Oct 1970.

Great Britain has achieved a reduction in traffic casualty rate from 101 per 1000 registered vehicles in 1933 to 24 per 1000 now. With highway construction and improvement always lagging behind increase in traffic volume, valid selection of priorities is essential. Examples are given of "non-improvements" and true improvements in highway design and maintenance. The need for accident records to correctly identify dangerous sites is discussed. Highway defects reported to be contributory accident causes were: restricted sight distance, skidding, and bad signs and road markings. Other highway features considered for investigation were: warning signs, street lighting, speed limits, and road layout.

Search terms: Highway improvements / Accident prevention; Great Britain / Accident prevention; Highway improvements / Priorities; Accident records / Accident location; Sight distances / Accident causes; Skidding / Accident causes; Highway signs / Accident causes; Highway design / Accident prevention; Hazards / Accident causes

2/9 Traffic Control

HS-008 489 Fld. 2/9

MEXICO'S NEW TRAFFIC SIGNS

by Rafael Cal y Mayor

Published in *Traffic Engineering* v41 n2 p60-7 (Nov 1970)

The history of Mexico's change from legend type traffic signs to the symbol type is given. The various signs and their meanings are explained and illustrated. The results of the plan and program are: the budgets for traffic signs

and markings have been increased; programs have been approved for installing new signs and markings, and maintaining existing ones; 69,600 new signs were installed on existing roads and 23,200 kilometers of white lines have been applied; damage to traffic control devices has been reduced.

Search terms: Traffic control devices / Mexico; Traffic signs / International aspects; Highway signs / International aspects; Traffic markings / International aspects

3/0 HUMAN FACTORS

3/1 Alcohol

HS-008 490 Fld. 3/1

IN MANY STATES, IT'S HARDER TO BECOME LEGALLY DRUNK THAN IT IS TO BECOME DEAD DRUNK.

State Farm Mutual Automobile Insurance Co., Bloomington, Ill., S39450

Published in *U. S. News and World Report* v68 n25 p79 (22 Jun 1970)

An advertisement by State Farm Mutual urging citizens to support .10% blood alcohol level as a "legally drunk" standard.

Search terms: Blood alcohol levels; Advertising

HS-008 491 Fld. 3/1; 1/3

DRINKING INVOLVEMENT AND AGE OF YOUNG DRIVERS IN FATAL ACCIDENTS

by James O'Day

Published in *HIT Lab Reports* p13-4 (Oct 1970)

The 1968 and 1969 Michigan fatal accident data bank files were interrogated to study the roles of driver age and drinking in traffic fatalities. Drivers who had not been drinking had a peak fatal accident involvement at age 18, then declining rather sharply. Drinking drivers had peak fatal accident involvement at age 21 and 22, declining thereafter but remaining higher than the non-drinkers.

3/1 Alcohol (Cont'd)

HS-008 491 (Cont'd)

Search terms: Age factor in accidents /Fatalities; Age factor in accidents /Drinking drivers; Age factor in accidents /Michigan; Young adult drivers /Fatalities; Age factor in accidents /Statistics; Drinking drivers /Statistics

3/4 Driver Behavior

HS-008 492 Fld. 3/4

EFFECTS OF SELF PERCEPTION ON DRIVING BEHAVIORS

by Dorothy S. Edwards; Clifford P. Hahn

American Institutes for Research, Silver Spring, Md., A33200

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p62-3 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

Three ongoing research projects are described: filming a driver's behavior without his knowing he is being observed and using results to predict accidents; accident reduction as result of driver's viewing film of his own driving together with discussion; and relating driver behavior on a simulator to driver behavior on the street.

Search terms: Driver behavior research /Motion pictures; Driver behavior research /Driving simulators; Driver improvement interviews; Accident research

AVAILABILITY: In HS-008 504

HS-008 493 Fld. 3/4; 1/3

PREDICTION OF ACCIDENTS AND VIOLATIONS USING NON-DRIVING PREDICTORS

by Edward Levonian

California Univ., Los Angeles, Inst. of Transportation and Traffic Engineering, C21000

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p66-8 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

This paper considers the degree of prediction in accidents and violations which is possible at the present time using economically feasible measures of nondriving characteristics of the driver. The following variables which have been explored in relation to accidents are noted: education, attitudes, and biographical elements.

Search terms: Accident proneness /Education; Accident proneness /Driver attitudes; Accident proneness /Demography; Accident research

AVAILABILITY: In HS-008 504

3/5 Driver Education

HS-008 494 Fld. 3/5

PIERCE COUNTY PILOT STUDY [WASHINGTON STATE]

by Douglas Toms

Washington, Dept. of Motor Vehicles, Olympia, W03000

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p35-7 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

Non directive group therapy involved 2,000 violators in the initial phase of a project launched by the Washington State Department of Motor Vehicles. It proved to be much less expensive than the traditional face to face interview. Results promise to be at least as good as the more traditional interview method. Group therapy attempts to help drivers to help themselves. It provides them with the opportunity of salvage their driver's license and at the same time determine why they have become a negligent driver. Non directive group therapy is working out to

be an excellent rehabilitative device that negates need for suspension in most cases. That school counselors made the best group leaders.

Search terms: Driver improvement /Discussion groups; Driver improvement schools; Driver records /Discussion groups; Driver improvement /Washington; Discussion group leaders

AVAILABILITY: In HS-008 504

HS-008 495 Fld. 3/5

DRIVER IMPROVEMENT INTERVIEW TRAINING AND EVALUATION PROJECT

by Noel Kaestner

Oregon, Dept. of Motor Vehicles, Salem, O15600

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p38-40 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

A controlled study of the driver improvement interview was carried out in Oregon. A structured interview was used. Findings, considered tentative, follow: about 30% more of the control group drivers have had moving violations or avoidable accidents; of those drivers that do not drive trouble free, the first involvement seems to be significantly sooner for the control group. Thus, the overall impression seems to be that the interview group tends to have fewer violations, fewer accidents, and greater delays before subsequent traffic involvement.

Search terms: Driver improvement interviews /Driver records; Driver improvement interviews /Oregon

AVAILABILITY: In HS-008 504

HS-008 496 Fld. 3/5

EFFECTS OF GROUP SESSIONS IN CHANGING DRIVER ATTITUDES

by Basil Y. Scott

New York (State), Dept. of Motor Vehicles, Albany, N51000

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p46-51 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

A study of attitudes of traffic violators is described. The driver records analyzed were grouped by geographic area in the state, and by treatment of violators. The formal hearing group showed little attitudinal change as a result of their hearings and in fact appear to exhibit a generally lower plateau of desirable or social driving attitudes than the clinic group before and after treatment. Nevertheless the proof of driver improvement modes should be measured by subsequent performance and here the clinic subjects were just as lacking as the hearing subjects. No significant difference was found between the upstate and downstate groups violation and accident experience. Significantly higher accident incidence for violators with previous records than for those without accidents was found.

Search terms: Driver attitudes / Driver improvement schools; Traffic courts / Driver improvement; Traffic courts / Driver attitudes; Urban areas / Driver records; Rural areas / Driver records; Group dynamics / Driver improvement

AVAILABILITY: In HS-008 504

HS-008 497 Fld. 3/5

MASS COMMUNICATION AND GROUP DISCUSSION TECHNIQUES

by Harold L. Henderson

Drivers Safety Service, Inc., New York, D26400

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p52-4 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

A project including the use of group discussions for accident repeaters is described. The research design included the implicit hypotheses concerning the training of nonprofessional

motor vehicle personnel in group leadership procedures, the construction of custom built psychological tests and attitude inventories, the effectiveness of a new integrating theme for safe driving known as the Strategy and Tactics of Driving, and the impact of eight hours of remedial knowledge and attitudes training on accidents and violations. The research has established these facts: nonprofessional personnel can be trained as effective group leaders; useful psychological inventories and attitude scales can be custom built for this kind of research; attitudes, personality, and knowledge scores shift in expected directions although differences between experimental subjects and controls are insignificant; self report questionnaires show drivers to be enthusiastic with course; preliminary results favor experimental group in accident and violation reduction.

Search terms: Discussion groups / Driver improvement; Psychological tests / Driver improvement; Driver records; Discussion group leaders

AVAILABILITY: In HS-008 504

HS-008 498 Fld. 3/5

GREYHOUND/EDEX PROFESSIONAL DRIVER TRAINING PROGRAM. (SOMETHING NEW IN SAFETY)

by Stan A. Ossman; James H. Hall

Greyhound Corp., San Francisco, Calif., G26500; Edex Corp., Palo Alto, Calif., E03320

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p73-5 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

Greyhound Lines felt the results of a driver improvement program in one division warranted extension of the program to other divisions. There was a significantly measurable reduction in the number of accidents. The safety director pointed out that this reduction was especially impressive because Greyhound drivers' accident rates were

low at the beginning of the program. Included in the one day retraining session were: the use of a completely automated Edex teaching system that includes a motion picture projector, film strip with sound, and individual push button responder to score all the drivers answers; testing of visual acuity reaction; and on the road performance.

Search terms: Bus drivers / Driver improvement schools; Bus drivers / Instructional materials; Bus drivers / Accident prevention

AVAILABILITY: In HS-008 504

3/6 Driver Licensing

HS-008 499 Fld. 3/6

DRIVER TESTS AS A MEANS OF ACCIDENT REDUCTION

by Angeline M. Jacobs; Joan S. Guilford

American Institutes for Research, Los Angeles, Calif., A33150

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p64-5 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

A study to determine whether various tests and interviews decrease the number of accidents in accident involved drivers and which tests if any are most effective in accident reduction is described. Other analyses indicate that the probability of having an accident in the post test period is an increasing function of the number of accidents in the pretest period. The tests include a battery measuring general motor skills, a battery measuring applied motor skills, and a written test measuring relevant driving knowledge.

Search terms: Driver tests / Driver improvement; Driver tests / Accident prevention; Driver improvement interviews; Accident research

AVAILABILITY: In HS-008 504

HS-008 500 Fld. 3/6

CAN DRIVING SIMULATORS BE USED IN SCREENING DRIVERS?

by Marshall Crawshaw

Evans Industries, Los Angeles, Calif., E23000

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p76-8 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

The thesis that driving simulators can be used to screen drivers is presented. A proposed program to develop procedures for the application of simulators is outlined. It is noted that the approach should be to ascertain the deficiencies of any driver in order that training programs may be developed.

Search terms: Driving simulators / Driver license examination

AVAILABILITY: In HS-008 504

HS-008 501 Fld. 3/6; 1/3

CAN PSYCHOLOGICAL TESTS BE DEVELOPED FOR USE IN SCREENING OF DRIVERS?

by Frederick L. McGuire

California Univ., Los Angeles. School of Medicine, C21600

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p69-72 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

This research has been based on tests of practically every person who applied for a driver's license in Jackson, Mississippi. The McGuire Safe Driver Scale together with a questionnaire to elicit biographical data was administered. Follow up to obtain driver record data was made on the first 500 cases. Driver mileage as accident risk factor presented problems in accuracy. The data will be analyzed with the objective in mind to predict the accident producing driver and to develop methodology in this type of research.

Search terms: Psychological tests / Driver records; Accident risks / Driver mileage; Accident research; Accident proneness / Demography

AVAILABILITY: In HS-008 504

HS-008 502 Fld. 3/6; 3/5

NEGLIGENT DRIVER RESEARCH PROJECT

by Zoltan Gross; G. Van Oldenbeek

California. Dept. of Motor Vehicles, Sacramento, C03000

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p41-5 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

A proposed study of methods of handling negligent drivers is outlined. Types of treatment projected include warning letters, group meetings of various types, and individual hearings. Due process will be protected. Evaluation of the treatment methods will be based primarily on the drivers records.

Search terms: Advisory letters / Driver improvement; Discussion groups / Driver improvement; Driver improvement interviews; Driver improvement schools; Driver improvement / California; Driver improvement / Research

AVAILABILITY: In HS-008 504

HS-008 503 Fld. 3/6; 3/5; 4/4

HOW SHOULD RESEARCH RELATE TO MOTOR VEHICLE DEPARTMENTS?

by Burton W. Marsh

AAA Foundation for Traffic Safety, Washington, D. C., A01200

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p1-22 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

Motor vehicle department responsibilities and deficiencies are discussed. In house and contract research are compared. Federal administrative and legislative aspects in relationship to research by state motor vehicle agencies are listed. Such concepts as driver aid, guidance and service; driver motivation; and driver selection and licensing are appraised.

Search terms: Motor vehicle departments / Research; Motor vehicle departments / Federal state relationships; Driver education; Driver attitudes; Driver licensing; Motor vehicle departments / Administration

AVAILABILITY: In HS-008 504

HS-008 504 Fld. 3/6; 3/5; 1/3; 4/4

AAMVA SUMMARY OF PROCEEDINGS: RESEARCH CONFERENCE AND WORKSHOP, APRIL 4-7, 1966, SACRAMENTO, CALIFORNIA

American Assoc. of Motor Vehicle Administrators, Washington, D. C., A25800

1966 107p

Sponsored by Casualty Insurance Companies serving California and California Trucking Association.

Papers presented at this conference discuss proposed and ongoing research in both private and public sectors. Driver education and licensing comprised the major type of research described. Funding also was included.

Search terms: Driver licensing / Research; Driver improvement / Research; Federal aid / Research; Accident studies / Finance

AVAILABILITY: Corporate author (Includes HS-008 481-3; HS-008 487; HS-008 492-503; HS-008 505-7.)

HS-008 505 Fld. 3/6; 4/4

WHAT DOES RESEARCH OFFER THE DRIVERS LICENSE ADMINISTRATOR?

by Ronald V. Thunen

California. Dept. of Motor Vehicles, Sacramento, C03000

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p23-7 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

Research offers a driver license administrator investigation into the elements of his duties: validations of the worth of a program; testing the validity of proposed programs and changes; planning including budget support, driver licensing, driver education, and record preservation.

Search terms: Driver licensing / Research; Driver licensing / Validation

AVAILABILITY: In HS-008 504

HS-008 506 Fld. 3/6; 4/4

THE MEASUREMENT OF PROCESS IN DRIVER CONTROL PROGRAMS

by Zoltan Gross

California. Dept. of Motor Vehicles, Sacramento, C03000

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p28-31 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

The function of the driver improvement analyst is discussed. Quality control measurement enables the department of motor vehicles to determine whether or not the analysts are functioning effectively and in accordance with the department's policy. Measurements of diagnosis of the driver's likelihood to improve and measurements of effectiveness of treatment are outlined.

Search terms: Driver improvement measurement

AVAILABILITY: In HS-008 504

3/12 Vision

HS-008 507 Fld. 3/12; 3/4

RELATIONSHIP BETWEEN VISION TEST SCORES AND DRIVING RECORD

by Albert Burg

California Univ., Los Angeles. Inst. of Transportation and Traffic Engineering, C21000

Published in *AAMVA Summary of Proceedings: Research Conference and Workshop* p60-1 (1966)

Presented at AAMVA Research Conference and Workshop, 4-7 Apr 1966, Sacramento, Calif.

Results of a study to evaluate the relationships between performance on several vision screening tests and driving performance, as reflected by accumulated accidents and convictions for traffic violations seems to support the following conclusions: driving record variables correlate most highly with each other, and next most highly with exposure, age, and age-related variables such as marital status and driving experience; the vision tests that correlate most highly with driving record are dynamic visual acuity, static visual acuity and size of visual field; when only those accidents are considered in which vision cannot be ruled out as a possible contributing factor, stronger relationships with vision test scores are found in the case where all accidents are considered; considerable variation in the vision driving relationship is found as a function of the sex and age group studied

Search terms: Vision /Driver performance; Driver records /Variables

AVAILABILITY: In HS-008 504

4/0 OTHER SAFETY-RELATED AREAS

4/6 Insurance

HS-008 508 Fld. 4/6

OUR MOBILE SOCIETY-TODAY AND TOMORROW. A SYMPOSIUM

by D. Grant Mickle; Harry Kalven, Jr.; Stafford R. Grady; Howard Pyle

Published in *Journal of Insurance Information* v26 n4 p50-8 (Jul-Aug 1965)

The future of the automobile is discussed, including the increasing burden of insurance claims and court loads

caused by auto accidents; auto insurance rate regulation; the efforts being made in accident prevention; the outlook for highway transportation.

Search terms: Highway transportation; Insurance claims; Automobile accidents; Accident costs; Insurance rates; Accident prevention; Highway safety

5/0 VEHICLE SAFETY

5/6 Fuel Systems

HS-008 509 Fld. 5/6

ALTERNATIVE FUELS FOR CONTROL OF ENGINE EMISSION

by E. S. Starkman; R. F. Sawyer; R. Carr; G. Johnson; L. Muzio

Published in *Journal of the Air Pollution Control Association* v20 n2 p87-92 (Feb 1970)

16 refs

Theoretical and experimental investigation has shown that spark ignition engine fuel composition can have a profound influence on exhaust content of potential air pollutants. Carbon monoxide and nitric oxide are two of these products of engine combustion which were studied. Considered were alcohols, hydrogen, ammonia, so-called reformed hexane, and a few selected representative hydrocarbons. Energy content and carbon to hydrogen ratio both are influential in determining carbon monoxide and nitric oxide concentrations at peak equilibrium conditions, and thus how much is exhausted to the atmosphere. Neither hydrogen nor ammonia can produce carbon monoxide (or unburned hydrocarbons) and theoretically should also give less nitric oxide, at most conditions, than do hydrocarbons. Measurement of the exhaust, while burning ammonia, shows that there is actually an increase in nitric oxide compared to hydrocarbons.

Search terms: Exhaust emission control /Air pollution; Fuels /Air pollution; Carbon monoxide /Exhaust emissions; Exhaust gases; Nitrogen oxides /Exhaust emissions; Air pollutants

HS-008 510 Fld. 5/6; 4/4
FED PROGRAM SPARKS INCEN-
TIVE FOR CLEAN CARS

Anonymous

Published in *Clean Air and Water News*
v2 n33 p14-5 (14 Aug 1970)

A Federal Clean Car Incentive Program to spur development of a low-pollution automobile has been established by the Department of Health, Education, and Welfare, according to Secretary Elliot L. Richardson. To be administered by the National Air Pollution Control Administration (NAPCA), the program is designed to stimulate private efforts to market a passenger car by the 1980's that will match the performance and convenience of the present-day automobile, but whose power plant will be fundamentally pollution free.

Search terms: Air pollution control/Exhaust emissions; United States Government/Air pollution control; National Air Pollution Control Administration; Automobile design/Air pollution control; Federal Clean Car Incentive Program

5/18 Steering Control System

HS-008 511 Fld. 5/18

WHAT YOU CAN DO ABOUT TIRED
SUSPENSION

by Tom Tappett

Published in *Mechanix Illustrated* v66
n511 p76-8, 128-9 (Dec 1970)

Various devices and adjustments to assist worn coil and leaf springs are briefly described, and their advantages and disadvantages shown. Air bag and auxiliary coil spring shock absorbers may be used to improve suspension, and some provide adjustable settings to tailor the ride. The heavy duty suspension package is considered the best buy in automotive options on new cars.

Search terms: Suspension systems;
Shock absorbers; Springs (elastic)

5/22 Wheel Systems

HS-008 512 Fld. 5/22

ROLE OF CORD PROPERTIES IN
TIRE IMPACT RESISTANCE

by Jal N. Kerawalla

Published in *Materials Research and Standards* v10 p15-9, 44, 46 (Jun 1970)

An improved technique for measuring the impact resistance of tires by means of an instrumented plunger imbedded in the track has been developed. The tire impact resistance is measured in terms of the size and shape of the object required to cause failure. The effect of various test parameters such as diameter and angle of the plunger, vehicle speed, inflation pressure, suspension stiffness, and tread depth on vertical height required to cause failure is established as a function of carcass strength for nylon and rayon tires. The load-time traces from the road-imbedded plunger are used to explain the differences in behavior of tires reinforced with various fibers. Techniques are developed for correlating laboratory cord tests with impact resistance of tires. The properties of individual cords imbedded in rubber and tested axially at speeds and temperatures simulating tire conditions are obtained and correlated with tire performance.

Search terms: Impact tolerances / Tire tests; Tire failures /Tire tests; Tire cords /Nylon; Tire cords / Rayon; Laboratory tests /Impact tolerances; Laboratory tests /Tire tests; Speed /Tire tests; Tire temperature /Tire tests; Inflation pressure / Tire tests; Tire performance /Speed; Tire performance /Tire temperature; Tire performance /Laboratory tests



executive summary

A SYNOPSIS OF A RECENTLY RELEASED NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION RESEARCH REPORT

PROCEEDINGS OF THE COLLISION INVESTIGATION METHODOLOGY SYMPOSIUM

The purpose for the contract was to initiate a symposium on motor vehicle collision investigation methodology to provide a means of exchanging ideas and information necessary to the continued development of the art.

Contract No. FH-11-7153
Cornell Aeronautical Laboratory, Inc.
4455 Genesee Street
Buffalo, New York 14221
DOT/HS-800 329
(includes 29 papers given at symposium)

Total Award Amount: \$21,656.00
Date Report Rec'd: 6/1/70
Release Date: 9/9/70

Background (1)

The motor vehicle transportation system affects the daily lives of all Americans and, indeed, of almost all human beings. Its impact upon our economic, social, financial, physical and institutional well-being has probably surpassed that of any other system within the last half century. One of its greatest, and almost without question its least desirable impacts, is the tool of human lives and suffering, along with its economic drain in property damage and accompanying insurance, attorney and court costs and costs associated with lost work time and lost vehicle service time.

Purpose and Objectives

For several years, the contractor, Cornell Aeronautical Laboratory, Inc. (CAL) sought to initiate a symposium on collision investigation methodology to provide a means of exchanging ideas and information necessary to the development of the art. The National Highway Traffic Safety Administration of the U.S. Department of Transportation and the Automobile Manufacturers Association, Inc., also recognized a need for a state of the art review of collision investigation methodology and a statement of user data requirements. The latter organizations arranged to sponsor a state of the art review to be conducted by CAL as a symposium. The stated objectives of the symposium as jointly agreed upon by CAL and its sponsors were:

1. To identify collision data users' needs.
2. To review and report on present state of the art collision investigation methodology.
3. To identify gaps and deficiencies in matching available data against users' requirements.
4. To report on new ideas and applications of technology to collision investigation to enhance the usefulness of the data produced.
5. To produce and distribute proceedings of the symposium to serve the needs of present investigators and those planning future collision investigation programs.

Planning

Selection of research personnel who would make presentations, the general subject matter to be included, and all those invited to participate was performed jointly by CAL and the symposium sponsors.

For more than a decade, most of the individual and organizational contributors and participants in this first Collision Investigation Methodology Symposium have dedicated their efforts to research and action programs to better define the

problem, to reduce the human and economic losses due to traffic accidents, and to measure the effectiveness of system improvements. In recent years a trend toward combination of talents from several scientific disciplines in the form of multidisciplinary teams to investigate traffic accidents has been developing. In any field in investigation and research involving application of several technologies and disciplines, exchange of ideas both within and across disciplinary boundaries is essential to progress. Such was the underlying philosophy upon which the planning and conduct of this symposium was based.

The Proceedings

In the proceedings (DOT/HS-800 329), the reader will find the 29 papers presented at the

symposium. Some of the papers are more complete than the oral presentation because only a brief, condensed version could be presented, due to the pressure of time. In the proceedings, the complete papers are published.

The order in which the papers are presented is the same as the order of presentation. Some oral presentations were followed by question and answer sessions, and these have been edited and presented. In a few instances, however, in which questions were either obviously misinterpreted, not answered, or were duplications of material already presented, they were omitted in the interest of conciseness.

The Papers

The titles of the papers presented follow:

DATA NEEDS AND HISTORY OF ACCIDENT INVESTIGATION

Motor-Vehicle Industry Collision Data Needs Louis C. Lundstrom	DOT/HS-800 330
The Federal Government's Collision Data Needs Wendell G. Eames	800 331
The Collision Data Needs of State and Local Governments Edmund R. Ricker	800 332
A Brief History of Motor Vehicle Accident Investigation Robert A. Wolf and John C. Fralish	800 333

ACCIDENT CAUSATION

Conceptual and Methodological Issues in Accident Research Herbert H. Jacobs	800 334
Vehicular Collision Research at the Georgia Institute of Technology Paul H. Wright	800 335
Aircraft Accident Investigation Methodology William L. Halnon	800 336
Psychological Autopsy John R. Finch	800 337
Techniques and Procedures for Accident Investigation Kenneth J. Tharp and John M. Keryeski	800 338

INJURY CAUSATION

Methodology of Injury Causation Investigation Donald F. Huelke and Harold W. Sherman	800 339
Laboratory Reconstruction of Occupant-Vehicle Impacts L. M. Patrick	800 340
Pathologist's Sub-Lethal Determinations Michael A. Luongo	800 341
Automotive Crash Injury Research John W. Garrett, Richard C. Braisted and Mary Ann Bouchard	800 342

TOOLS AND TECHNOLOGICAL APPLICATIONS

Use of Photogrammetry in Collision Investigation Dietrich W. Berling	800 343
Traffic Sensing and Surveillance System Experimental Installation, Washington, D.C. Lawrence D. Powers and Merton J. Rosenbaum, Jr.	800 344
Video Investigation for Urban Freeway Collisions Bruce W. Pince	800 345
Accident Simulation by Computer Norman J. DeLeys	800 346

ACCIDENT INVESTIGATIONS IN OTHER COUNTRIES

Methodology of Collision Investigations at Birmingham University, England G. M. Mackay	800 347
Collision Investigation in Australia A. J. McLean	800 348
Collision Investigations in the Republic of South Africa J. R. Odendaal	800 349

VEHICLE DAMAGE AND INJURY INDICES

Development of a Medically Acceptable Injury Scale Harold A. Fenner, Jr.	800 350
The Vehicle Deformation Index: A Report from the International Ad Hoc Committee for Collision Deformation and Trauma Indices Arnold W. Siegel	800 351
The Traffic Accident Data Project Scale B. J. Campbell, William Rouse and Francis Gendre	800 352

DATA SYSTEMS

GM-ADAP—An Efficient System for the Collection, Storage and Retrieval of Accident Information Robert A. Rogers, Wilton D. Nelson and Arline R. Rininger	800 353
Modern Accident Data Analysis Techniques James O'Day	800 354
Data Processing and Analysis Techniques Donald F. Mela	800 355
A National Collision Data Collection System Eugene E. Flamboe	800 356
The Role of the Police in Collision Investigation E. M. Pitcher	800 357

LEGAL ASPECTS

Legal Aspects of Data Collection in Automobile Collision Investigations James Patrick Smith, Jr.	800 358
---	---------

MAJOR CONCLUSIONS AND RECOMMENDATIONS

Foreword

The presentation and discussion in this Collision Investigation Methodology Symposium of papers devoted solely to data users' requirements and the methodology used in accident investigation by a major segment of the investigation fraternity throughout the world, represents a unique event in highway accident research. In an effort to more fully utilize the results of this three-day exchange of research information, a committee was selected to present conclusions and recommendations based on the symposium proceedings, the discussions among participants. The committee consisted of representatives of the sponsors, the Automobile Manufacturers Association, Inc., and the National Highway Traffic Safety Administration of the U.S. Department of Transportation; the project manager, the Cornell Aeronautical Laboratory, Inc.; and invited researchers who participated in the symposium.

Conclusions and recommendations that emanated from the meeting are:

- Papers presented by state, federal and industry representatives support and need for a multi-level data collection system to adequately supply the accident and injury causation data they require.

- A need for further consideration of appropriate experimental study design and other conceptual issues is apparent, particularly in statistical aspects of accident research.
- An urgent need exists to collect appropriate types and quantities of data for such specific user needs as accident rate studies, evaluation of the vehicle as a total "package", studies of individual vehicle components, evaluation of the highway and other environmental factors and studies of the driver and driver-environment relationships. In data collection, consideration must be given to study objectives, the depth of investigation required to provide valid, reliable data, and the data content and detail required to meet study objectives. Thus, data collected should range from the anecdotal reports of special teams to the routine police reports used for statistical summaries. Data collected at various levels must be compatible and should be collected as part of a comprehensive, integrated program.
- Collection of data in a multi-level investigation system requires different criteria and methods: a brief uniform police report, a bi-level report form for use in sample areas, rapid response teams at the federal and state levels, and a semistructured approach in medical-engineering studies.

- Accident investigators appear to be attaining a consensus concerning injury causation methodology with respect to development of vehicle damage and occupant injury scales and data organization and processing systems. However, there is a need for further development and testing of indices and systems, and for human tolerance data.
- It is important that available methods and procedures be utilized as fully as possible. Validation of vehicle damage and other new indices as rapidly as possible is essential since these new tools are being put to use immediately.
- Methodology used in studying accident causation requires major emphasis if development and data collection is to keep pace with efforts involving impact injury and injury causation. In this study area data concerning the driver and the highway are needed, as well as vehicle data.
- Potentially useful tools for use in both injury and accident causation studies have been described at this symposium: crash recorder, photogrammetry, video equipment and accident reconstruction using computer simulation. However, additional development and applications of existing technology are needed, particularly in such areas as lighting, photogrammetry and accident reconstruction.

Efforts should be made to continue and expand international cooperation and an exchange of information on investigation methodology.

Analytical techniques to more fully utilize the mass of individual case data obtained in the intensive investigation of accident causation require further development. Such techniques for injury causation appear to be more advanced at the present time.

Encouragement and support of police and public cooperation in accident investigation should be a specific objective. Establishment of appropriate

communication channels for the dissemination of data to police, physicians and the public is particularly important in this respect.

Protection against legal involvement of those involved in accident research, as investigators or witnesses or participants in the accident is deemed essential. Collection of data will be seriously impaired as time goes on if investigators must make court appearances every time an accident is investigated. Furthermore, evidence is accumulating that fear of self-incrimination is responsible for the refusal of drivers to cooperate with investigators and, in some instances, for their providing false or misleading statements. Inability to impound vehicles for thorough inspection where malfunction is suspected also seriously hampers many investigations.

Continuation on an international scale of the effort to exchange information on investigation methodology through symposia or other meetings is strongly recommended. The suggested format for future meetings should include formal presentations in key subject areas, followed by workshop sessions of interested and qualified participants.

Establishment of committees in selected investigation areas is recommended in order to ensure continuing progress in the state of the art and in the dissemination of information. The possibility of joint support for such committees by the government and private sectors might be explored.

The Contract Manager has certified that the contractor's work has been satisfactorily completed and that all contractual obligations have been met.

The opinions, findings, and conclusions expressed in this summary are those of the contractor and not necessarily those of NHTSA.

Availability: NTIS (formerly Clearinghouse-CFSTI), U.S. Department of Commerce, Springfield, Va. 22151. Individual papers in this document cannot be ordered separately. Order DOT/HS-800 329 in papercopy (HC) or in microfiche (MF).

U.S. DEPARTMENT OF TRANSPORTATION NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

WASHINGTON, D.C. 20591

OFFICIAL BUSINESS

Penalty For Private Use, \$300



POSTAGE AND FEES PAID
FEDERAL HIGHWAY ADMINISTRATION

NHTSA REGIONAL OFFICES

Region	Address
I	Regional Administrator, NHTSA, Transportation Systems Center, 55 Broadway, Cambridge, Mass., 02142, Tel: 617-494-2681. (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont)
II	Regional Administrator, NHTSA, 4 Normanskill Blvd., Delmar, N.Y. 12054, Tel: 518-427-4095. (New Jersey, New York, and Puerto Rico)
III	Regional Administrator, NHTSA, Room 817 Federal Building, 31 Hopkins Plaza, Baltimore, Maryland 21021, Tel: 301-962-3878. (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia)
IV	Regional Administrator, NHTSA, Suite 200, 1720 Peachtree Road, N.W., Atlanta, Georgia 30309, Tel: 404-526-3405. (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee)
V	Regional Administrator, NHTSA, 18209 Dixie Highway, Homewood, Illinois 60430, Tel: 312-799-6300. (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin)
VI	Regional Administrator, NHTSA, 819 Taylor Street, Room 8A42, Fort Worth, Texas 76102, Tel: 817-334-2021. (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas)
VII	Regional Administrator, NHTSA, P.O. Box 7186, Country Club Station, Kansas City, Missouri 64113, Tel: 816-361-7887. (Iowa, Kansas, Missouri, and Nebraska)
VIII	Regional Administrator, NHTSA, Room 107, Bldg. 40, Denver Federal Center, Denver, Colorado 80225, Tel: 303-233-6429. (Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming)
IX	Regional Administrator, NHTSA, 450 Golden Gate Avenue, Box 36096, San Francisco, California 94102, Tel: 415-556-5450. (Arizona, California, Hawaii, and Nevada)
X	Regional Administrator, NHTSA, Room 301, Mohawk Bldg., 222 S.W. Morrison Street, Portland, Oregon 97204, Tel: 503-226-3754. (Alaska, Idaho, Oregon, and Washington)